

## WHAT IS CLAIMED IS

1. A purified polynucleotide-comprising a nucleic acid sequence encoding the polypeptide  
5 having the sequence substantially as depicted in SEQ ID NO:3 or a biologically active  
fragment thereof.
2. The polynucleotide of Claim 1 wherein the polynucleotide sequence comprises the  
sequence substantially as depicted in SEQ ID NO:2.
- 10 3. An expression vector comprising the polynucleotide of Claim 1.
4. An antisense molecule comprising the complement of the polynucleotide of Claim 2 or a  
biologically-effective portion thereof.
- 15 5. A host cell transformed with the expression vector of Claim 3.
6. A purified polypeptide comprising the amino acid sequence substantially as depicted in  
SEQ ID NO:3.
- 20 7. An antibody specific for the polypeptide of Claim 6.
8. A method for producing cells which express a biologically active polypeptide  
substantially as depicted in SEQ ID NO:3, said method comprising
- 25 a) culturing a host cell according to Claim 5 under conditions suitable for the  
expression of said polypeptide.
9. A method for producing a polypeptide having the amino acid sequence substantially as  
30 depicted in SEQ ID NO:3, said method comprising the steps of:

- 5  
10  
15  
20  
25  
30  
35  
40  
45  
50  
55  
60  
65  
70  
75  
80  
85  
90  
95  
100  
105  
110  
115  
120  
125  
130  
135  
140  
145  
150  
155  
160  
165  
170  
175  
180  
185  
190  
195  
200  
205  
210  
215  
220  
225  
230  
235  
240  
245  
250  
255  
260  
265  
270  
275  
280  
285  
290  
295  
300  
305  
310  
315  
320  
325  
330  
335  
340  
345  
350  
355  
360  
365  
370  
375  
380  
385  
390  
395  
400  
405  
410  
415  
420  
425  
430  
435  
440  
445  
450  
455  
460  
465  
470  
475  
480  
485  
490  
495  
500
- a) culturing a host cell according to Claim 5 under conditions suitable for the expression of said polypeptide, and
- b) recovering said polypeptide from the host cell culture.

10. A method of identifying compounds that modulate the biological activity of a potassium channel, comprising:

- 10 (a) combining a candidate compound modulator of biological activity with a potassium channel polypeptide having the sequence substantially as depicted in SEQ ID NO:3, and
- (b) measuring an effect of the candidate compound modulator on the biological activity.

15 11. A method of identifying compounds that modulate the biological activity of a potassium channel comprising:

- (a) combining a candidate compound modulator of a potassium channel biological activity with a host-cell expressing a potassium channel polypeptide having the sequence
- 20 substantially as depicted in SEQ ID NO:3, and
- (b) measuring an effect of the candidate compound modulator on the biological activity.

25 12. A method of identifying compounds that modulate neurophysiology, comprising:

- (a) combining a candidate compound modulator of neurophysiology with a polypeptide of a potassium channel having the sequence substantially as depicted in SEQ ID NO:3, and
- (b) measuring an effect of the candidate compound modulator on a biological activity of the
- 30 potassium channel.

13. A method of identifying compounds that modulate neurophysiology, comprising:

5 (a) combining a candidate compound modulator of neurophysiology with a host-cell  
expressing a polypeptide of a potassium channel having the sequence substantially as  
depicted in SEQ ID NO:3, and

10 (b) measuring an effect of the candidate compound modulator on a biological activity of the  
potassium channel.

14. A compound that modulates the biological activity of a human potassium channel  
identified by the method of Claim 10.

15 15. A compound that modulates the biological activity of a human potassium channel  
identified by the method of Claim 11.

16. A compound that modulates neurophysiology identified by the method of Claim 12.

20 17. A compound that modulates neurophysiology identified by the method of  
Claim 13.

18. A pharmaceutical composition comprising a compound that modulates the biological  
activity of a human potassium channel according to Claim 14.

25

19. A pharmaceutical composition comprising a compound that modulates the biological  
activity of a human potassium channel according to Claim 15.

30 20. A pharmaceutical composition comprising a compound that modulates neurophysiology  
according to Claim 16.

21. A pharmaceutical composition comprising a compound that modulates neurophysiology according to Claim 17.

5 22. A method of treatment of a patient in need of such treatment for a condition which is mediated by the biological activity of a human potassium channel, comprising administration of a modulating compound according to Claim 14.

10 23. A method of treatment of a patient in need of such treatment for a condition which is mediated by the biological activity of a human potassium channel, comprising administration of a modulating compound according to Claim 15.

15 24. A method of treatment of a patient in need of such treatment for a condition which is mediated by neurophysiology, comprising administration of a modulating compound according to Claim 16.

20 25. A method of treatment of a patient in need of such treatment for a condition which is mediated by neurophysiology, comprising administration of a modulating compound according to Claim 17.

26. A method for inhibiting the expression of a potassium channel in a cell comprising administering an effective amount of an antisense molecule according to Claim 4 to said cell.

25 27. A method for modulating the neurophysiology of a cell comprising administering an effective amount of an antisense molecule according to Claim 4 to said cell.

30 28. A diagnostic composition for the identification of a polypeptide sequence comprising the amino acid sequence substantially as depicted in SEQ ID NO:3, comprising the antibody of Claim 7.

29. A diagnostic composition for the identification of a polynucleotide sequence comprising the sequence substantially as depicted in SEQ ID NO:2 or a fragment indicative thereof, comprising PCR primers derived from SEQ ID NO:1.

5

30. A diagnostic composition for the identification of a polynucleotide sequence comprising the sequence substantially as depicted in SEQ ID NO:4 or a fragment indicative thereof, comprising PCR primers derived from SEQ ID NO:4.